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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,205

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EXAMINER

CANTELMO, GREGG

ART UNIT

PAPER NUMBER

1795

NOTIFICATION DATE

DELIVERY MODE

08/06/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/585,205	Applicant(s) SOTOWA ET AL.	
	Examiner Gregg Cantelmo	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 4-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :7/3/06; 6/5/07; 6/27/07;11/29/07; 3/14/08.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-21 in the reply filed on June 3, 2010 is acknowledged.
2. Claims 22-37 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on June 3, 2010.
3. However, claims 2 and 4-21 are also withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim.

Applicant argues that claim 2, depending on claim 1 does not limit the amount of carbon fiber or the amount of SBR binder as recited and thus claim 3 is also within the scope of claim 2 and thus claim 2 reads on the elected species. Applicant applies this reasoning to claims 4-21 as well.

This argument is not persuasive for the following reasons.

As previously set forth:

An international application should relate to only one invention or, if there is more than one invention, the inclusion of those inventions in one international application is only permitted if all inventions are so linked as to form a single general inventive concept (PCT Rule 13.1). With respect to a group of inventions claimed in an international application, unity of invention exists only when there is a technical relationship among the claimed inventions involving one or more of the same or

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corresponding special technical features. unity of invention exists only when there is a technical relationship among the claimed inventions involving one or more special technical features. The term “special technical features” is defined as meaning those technical features that define a contribution which each of the inventions considered as a whole, makes over the prior art. Lack of unity can be established “a posteriori” in light of prior art wherein the prior art teaches that some of the claimed inventions lack recitation of a common special technical feature. According to the corresponding ISR, JP 11-176442 is held to teach the invention of at least claim 1. Thus claim 1 lacks a special technical feature and the claims lack a common special technical feature. Therefore lack of unity of invention exists and restriction is proper.

Upon Election of Group I, the following species requirement is presented:

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

Claim 2, wherein the technical feature therein is directed to the SBR particle size;

Claim 3, wherein the technical feature therein is directed to the amount of carbon fiber and SBR on the basis of the total amount of active substance, binder and carbon fiber;

Claims 4-6, wherein the technical feature therein is directed to the thickener;

Claim 7, wherein the technical feature therein is directed to the material having a specific resistance;

Claims 8 and 11, wherein the technical feature therein is directed to the carbon fiber being graphite;

Claim 9, wherein the technical feature therein is directed to the carbon fiber being graphite and having an oxygen containing functional group attached thereto;

Claim 10, wherein the technical feature therein is directed to the carbon fiber containing boron;

Claim 12, wherein the technical feature therein is directed to the carbon fiber having a hollow space;

Claim 13, wherein the technical feature therein is directed to a branched carbon fiber;

Claim 14, wherein the technical feature therein is directed to the active substance further containing Si;

Claims 15 and 21, wherein the technical feature therein is directed to the active substance being a non-graphite carbon material;

Claim 16, wherein the technical feature therein is directed to the carbonaceous particles having initial properties;

Claims 17, 18 and 20, wherein the technical feature therein is directed to the active substance containing graphite in an amount of 50% mass or more;

Claim 19, wherein the technical feature therein is directed to the active substance is in the form of particles having a particular mass amount of graphite particles having particular initial properties.

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise require all the limitations of an allowed generic claim.

REQUIREMENT FOR UNITY OF INVENTION

As provided in 37 CFR 1.475(a), a national stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept ("requirement of unity of invention"). Where a group of inventions is claimed in a national stage application, the requirement of unity of invention shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.

The determination whether a group of inventions is so linked as to form a single general inventive concept shall be made without regard to whether the inventions are claimed in separate claims or as alternatives within a single claim. See 37 CFR 1.475(e).

WHEN CLAIMS ARE DIRECTED TO MULTIPLE CATEGORIES OF INVENTIONS

As provided in 37 CFR 1.475(b), a national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the following combinations of categories:

- (1) A product and a process specially adapted for the manufacture of said product; or
- (2) A product and process of use of said product; or
- (3) A product, a process specially adapted for the manufacture of the said product, and a use of the said product; or
- (4) A process and an apparatus or means specifically designed for carrying out the said process; or
- (5) A product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process.

Otherwise, unity of invention might not be present. See 37 CFR 1.475(c).

A similar lack of unity was presented in the international application with, given the lack of a special technical feature common to dependent claims, each dependent claim is then specific to its own special technical feature. In the international application only claim 1 and one dependent claim to claim 1 (claim 2) were considered with respect to the special technical feature of claim 2. This special technical feature, not recited in any of the remaining dependent claims is basis for withdrawing these other dependent

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claims for while they do not exclude the features of claim 2, they do not require any such special technical feature and thus fail to correspond to a single invention.

The reasoning set forth in the ISRs lack of unity was similarly applied to this national stage application. Since claim 1 lacks a special technical feature, then none of the dependent claims correspond to the same common special technical feature, and each dependent claim then corresponds to its own special technical feature. Given that elected claim 3 is not recited in any of claims 2 and 4-21 then only claim 3 is elected since the special technical features recited therein (the amount of carbon fiber, amount of SBR based on the total amount of active substance, binder and carbon fiber) since none of claims 2 and 4-21 require this special technical feature.

Therefore claims 2 and 4-21 are withdrawn from consideration in accordance with unity of invention practice as to species which do not correspond to the elected species (claim 3) special technical features.

Action on the merits of claims 1 and 3 follows.

Response to Preliminary Amendment

4. The preliminary amendment received July 3, 2006 has been entered.

Priority

5. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

6. The information disclosure statements filed July 3, 2006; June 5, 2007; June 27, 2007; November 29, 2007 and March 14, 2008 have been placed in the application file

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and the information referred to therein has been considered as to the merits. Duplicate citations have been lined through in any latter-filed information disclosure statement.

Drawings

7. No drawings appear to have been filed.

Specification

8. The abstract of the disclosure is objected to because:

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In the particular case the phrase "characterized" is held to be exemplary legal phraseology and should be amended. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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9. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by JP 11-176442 (Otsuka).

Otsuka discloses a negative electrode material for a lithium battery comprising mesobead black powder and graphite carbon fiber (abstract and para. 24). The graphite active material has a specific surface area of 0.7 m²/g or more and 5.0 m²/g or less (abstract as applied to claim 1). The active material further includes a styrene butadiene rubber (SBR) binder (para. 24). The carbon fiber has a diameter of 0.1 micrometers or more to 0.3 micrometers or less (para. 17).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuka as applied to claim 1 in view of U.S. Patent No. 6,998,192 (Yumoto) or U.S. Patent No. 6,037,095 (Miyasaka).

The weight ratio of the active material (mesophase black lead) to the carbon fiber is 93:3 to 80:20 and preferably 95:5-90:10. The specific mixture in the example of para. 24 of Otsuka is a weight ratio of 93:7, graphite to fiber. This ratio is further mixed with an unspecified amount of SBR binder.

SBR binders are understood in the art to exhibit superior tackiness, improving the flexibility of the electrode while requiring less binder to the mixture to adequately bind the mixture. Using a smaller amount of SBR to achieve sufficient adhesion of the active material components would expectedly reduce the internal resistance and increase the capacity of the battery since it would increase the proportion of active material relative to the binder and in the case of Otsuka increase the active material relative to both the binder and the already disclosed limited fiber presence. Thus for the weight ratio of 93:7 wt% (active material to carbon fiber) as disclosed in para. 24 of Otsuka which is further combined with an SBR binder, it would have been within the skill of the worker in the art to envision SBR binder amounts in the claimed range as a result effective

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variable which provides sufficient tackiness at a lower amount of binder and thus would have a significantly greater active material ratio to the fiber and binder. This high active material ratio would thus provide an electrode having superior capacity.

By example, Yumoto teaches of a negative electrode mixture including carbonaceous materials and an SBR component where the SBR binder is present in an amount up to 5wt% to impart binding and elasticity to the electrode (col.1, ll. 40-60). Miyasaka also teaches of using an SBR binder at 4 wt% in a carbonaceous negative electrode (col. 12, ll. 45-50).

Therefore SBR binders in amounts of less than 6 wt% are commonly used in the art to provide a sufficient degree of binding while maximizing the amount of active material in the electrode and also improving the flexibility of the electrode material. Maximizing the amount of active material also maximizes the capacity of the electrode material.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Otsuka to limit the amount of SBR binder therein to a range of up to 5 wt% as suggested by Yumoto or Miyasaka since it would have provided a sufficient degree of binding while having maximized the amount of active material in the electrode and also improved the flexibility of the electrode material. Maximizing the amount of active material would have also maximized the capacity of the electrode material.

Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is

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critical. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). It has been held that when the difference between a claimed invention and the prior art is the range or value of a particular variable, then a prima facie rejection is properly established when the difference in the range or value is minor. Titanium Metals Corp. of Am. v. Banner, 778 F.2d 775, 783, 227 USPQ 773, 779 (Fed. Cir. 1985).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. EP 1478039A2 is cited of interest.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregg Cantelmo/
Primary Examiner
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